IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Art Unit:

: 1742

Examiner

Andrew E. Wessman

Serial No. Filed

09/680,088

Inventors

October 5, 2000 Seiji Nabeshima

Yasuo Kishimoto

Shuji Takeuchi

Title

RUST-RESISTANT

CALCIUM STEEL

22469

PATENT TRADEMARK DIFFICE

Docket No.: 1396-00

Confirmation No.: 8261

DECLARATION OF SELJI NABESHIMA

Commissioner for Patents Washington, DC 20231

Sir:

 $(\tilde{\xi}, \tilde{y})$

I, Seiji Nabeshima, hereby declare that I reside at Chiba Japan, that I am one of the inventors named in the above-identified U.S. Patent application, that I have for many years been employed at Kawasaki Steel Corporation, that I am thoroughly familiar with the art related to rust-resistant steel sheets and that I have personally prepared or supervised the preparation of the Examples and Comparative Examples set forth in the Specification for the above-identified invention.

I further declare that I have studied U.S. Patent No. 5,616,188 to Kato et al., and that, for the reasons set forth below, the method for producing steel sheets disclosed in Kato does not inherently have, and does not disclose, teach, or suggest, a calcium containing rust-resistant steel sheet having an equilibrium sulfur soluble amount (%S inc.) value of at least 80% of CaO-containing oxide inclusions having a particle diameter of 2 μm or larger of 0.3 wt% or less, as in the claimed invention, or the unexpected improvements in rust resistance achieved hereby.

As discussed in the Specification for the above-identified patent application on pages 12-14, the equilibrium sulfur soluble amount in the CaO-containing oxide inclusions is determined not only by the weight percent of sulfur, but also by the Al and Ti used to deoxidize the steel sheet and the optical basicity of the oxide inclusions, as well as the casting temperature used during the continuous casting process. The importance of all of



these different factors is exemplified in the equation of Sosinsky and Sommerville set forth on page 13 of the Specification.

The importance f controlling all of these different parameters is also factually demonstrated by Example 1 and Comparative Example 1 in the Specification, as well as Figs. 1-4. The steel sheet shown in Comparative Example 1 has only 0.010 wt% of sulfur, but includes an equilibrium sulfur soluble amount (%S inc.) value of the C2O-containing oxide inclusions of over 0.1 wt%, which is much greater than the 0.03 wt% achieved in the claimed invention.

Similarly, the Kato reference discloses a method of producing molten aluminumkilled steel, in which metallic Ca is added to the molten steel to produce a Ca content of about 0.0005 to 0.005 wt%, and satisfy (% Ca) x (% S) of less than or equal to about 2 x 10-5, but nowhere even discusses the equilibrium sulfur soluble amount (%S inc.) value of the CaO-containing oxide inclusions, much less the use of Al and Ti and the control of the other important parameters in achieving the claimed equilibrium sulfur soluble amount (%S inc.) value.

The undersigned declares that all statements made herein of his own knowledge are true and all statements made on the information and beliefs are believed to be true and further that these statements were made with the knowledge that willful false statements and the likes are made are punishable by fine or imprisonment, or both, under §1001 of Title 18 in the United States Code, and thus such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: 19.08.202

SEIT NABESHIMA